

Application No. 09/667,084
Amendment "D" dated October 26, 2005
Reply to Office Action mailed July 26, 2005

AMENDMENTS TO THE CLAIMS

The listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1-64. (Canceled).

Claim 65. (Currently Amended) A communication method in a third communication apparatus which is directly connected to ~~located between~~ a first communication apparatus and can communicate with a second communication apparatus through a network, the first communication apparatus and the second communication apparatus performing data communication based on PPP, the communication method comprising the steps of:

receiving an LCP echo request transmitted by the first communication apparatus to the second communication apparatus; and

transmitting an LCP echo reply to the first communication apparatus.

Claims 66-70. (Cancelled).

Claim 71. (Currently Amended) A communication method in a third communication apparatus of a first node located between a first communication apparatus of [[a]] the first node and a second communication apparatus of a second node, the first communication apparatus and

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the second communication apparatus performing data communication based on PPP, the communication method comprising the steps of:

intermediating a setting request packet from the second communication apparatus to the first communication apparatus;

receiving a setting rejection packet or a setting negation packet from the first communication apparatus;

producing a setting request packet according to the setting rejection packet or the setting negation packet; and

transmitting the produced setting request packet to the first communication apparatus.

Claim 72. (Previously Presented) The communication method as claimed in claim 71, wherein the third communication apparatus notifies setting rejection or setting negation to the second communication apparatus by transmitting only information included in a setting rejection packet or a setting negation packet to the second communication apparatus, when the third communication apparatus receives the setting rejection packet or the setting negation packet from the first communication apparatus, after intermediating a setting request packet from the second communication apparatus to the first communication apparatus.

Claim 73. (Previously Presented) The communication method as claimed in claim 71, wherein the third communication apparatus terminates a setting identification packet when the third communication apparatus receives the setting identification packet after intermediating a setting request packet from the second communication apparatus to the first communication apparatus and receiving a setting rejection packet or a setting negation packet

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from the first communication apparatus, and the third communication apparatus does not terminate a setting identification packet when the third communication apparatus receives the setting identification packet without receiving a setting rejection packet or a setting negation packet from the first communication apparatus after intermediating a setting request packet from the second communication apparatus to the first communication apparatus.

Claim 74. (Currently Amended) A communication method in a third communication apparatus of a first node located between a first communication apparatus of [[a]] the first node and a second communication apparatus of a second node, the first communication apparatus and the second communication apparatus performing data communication based on PPP; the communication method comprising the steps of:

intermediating a setting request packet from the first communication apparatus to the second communication apparatus;

intermediating a notification of setting rejection or setting negation from the second communication apparatus to the first communication apparatus;

receiving a setting request packet from the first communication apparatus; and

terminating the received setting request packet.

Claim 75. (Previously Presented) The communication method as claimed in claim 74, wherein the third communication apparatus produces a setting rejection packet or a setting negation packet and transmits it to the first communication apparatus, when the third communication apparatus receives a notification of setting rejection or setting negation from the

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second communication apparatus after intermediating a setting request packet from the first communication apparatus to the second communication apparatus.

Claim 76. (Previously Presented) The communication method as claimed in claim 74, wherein the third communication apparatus produces a setting identification packet and transmits it to the first communication apparatus, when the third communication apparatus receives from the first communication apparatus, all of setting request packets according to notifications of setting rejection or setting negation from the second communication apparatus to the first communication apparatus after intermediating setting request packets from the first communication apparatus to the second communication apparatus and intermediating the notifications.

Claim 77. (Currently Amended) A communication method in a third communication apparatus of a first node located between a first communication apparatus of [[a]] the first node and a second communication apparatus of a second node, the first communication apparatus and the second communication apparatus performing data communication based on PPP, the communication method comprising the steps of:

intermediating a notification of end request from the first communication apparatus to the second communication apparatus;

producing an end identification packet; and

transmitting the produced end identification packet to the first communication apparatus.

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Claim 78. (Previously Presented) The communication method as claimed in claim 77, wherein the third communication apparatus produces an end request signal and transmits it to the second communication apparatus, when the third communication apparatus receives an end request packet from the first communication apparatus.

Claim 79 (Previously Presented) The communication method as claimed in claim 77, wherein the third communication apparatus produces an end request packet and transmits it to the first communication apparatus, when the third communication apparatus receives a notification of an end identification from the second communication apparatus after intermediating a notification of an end request from the first communication apparatus to the second communication apparatus.

Claim 80. (Previously Presented) The communication method as claimed in claim 79, wherein the third communication apparatus terminates an end identification packet, when the third communication apparatus receives the end identification packet from the first communication apparatus after transmitting the produced end request packet.

Claims 81 and 82. (Cancelled).

Claim 83. (Currently Amended) A communication method in a third communication apparatus of a first node located between a first communication apparatus of ~~[[a]]~~ the first node and a second communication apparatus of a second node, the first communication apparatus and

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the second communication apparatus performing data communication based on PPP, the
communication method comprising the steps of:

intermediating a notification of end request from the second communication apparatus to
the first communication apparatus;

receiving an end identification packet from the first communication apparatus; and
terminating the end identification packet,

wherein the third communication apparatus produces an end identification signal and
transmits it to the second communication apparatus, when the third communication apparatus
receives an end request packet from the first communication apparatus after intermediating a
notification of an end request from the second communication apparatus to the first
communication apparatus.

Claim 84. (Previously Presented) The communication method as claimed in
claim 83, wherein the third communication apparatus produces an end identification packet and
transmits it to the first communication apparatus after transmitting the produced end
identification signal.

Claim 85. (Canceled)

Claim 86. The communication method as claimed in any one of claims 71, 74, 77 [L.]
and 83 [[and 85]], wherein the third communication apparatus is a mobile station.

Claim 87. (Currently Amended) A data conversion apparatus comprising:

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reception means for receiving first data;

identifying means for identifying one PPP frame in a lower layer than PPP;

data conversion means for converting said first data into second data based on the

identified one PPP frame; and

transmission means for transmitting said second data,

wherein said first data is data having a PPP frame configuration, or a frame configuration flag-deleted from a PPP frame configuration, and being not octet-inserted ~~[[or]]~~ and not bit-inserted, and

said second data is data having a PPP frame configuration and being octet-inserted or bit-inserted.

Claim 88. (Currently Amended) A data conversion apparatus comprising:

reception means for receiving first data;

identifying means for identifying one PPP frame in a lower layer than PPP;

data conversion means for converting said first data into second data based on the

identified one PPP frame; and

transmission means for transmitting said second data,

wherein said first data is data having a PPP frame configuration, or a frame configuration flag-deleted from a PPP frame configuration, and being not octet-inserted ~~[[or]]~~ and not bit-inserted, and

said second data is data having a frame configuration of data link layer protocol other than PPP.

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Claim 89. (New) A data conversion method in a third communication apparatus located between a first communication apparatus and a second communication apparatus performing data communication with the first communication apparatus based on PPP, the data conversion method comprising:

- a reception step for receiving first data from the first communication apparatus;
- a data conversion step for converting said first data into second data; and
- a transmission step for transmitting said second data toward the second communication apparatus,

wherein said first data is data being not octet-inserted and not bit-inserted, and said second data is data being octet-inserted or bit-inserted, or data having a frame configuration of data link layer protocol other than PPP, or said first data is data being octet-inserted or bit-inserted, or data having a frame configuration of data link layer protocol other than PPP, and said second data is data being not octet-inserted and not bit-inserted, and

said data being not octet-inserted and not bit-inserted has a frame configuration in which additional information including information for identifying frame partition is added to a PPP frame configuration, or a frame configuration in which additional information including information for identifying frame partition is added to a frame configuration flag-deleted from a PPP frame configuration, and

said information for identifying is frame length.

Claim 90. (New) The data conversion method as claimed in claim 89, wherein said data conversion step comprises:

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a deletion step for performing octet deletion or bit deletion to data having a PPP frame configuration and being octet-inserted or bit-inserted; and

an additional information addition step for adding additional information including information for identifying a frame partition to the data octet-deleted or bit-deleted by said deletion step.

Claim 91. (New) The data conversion method as claimed in claim 89, wherein said data conversion step comprises:

a flag deletion step for deleting a flag from data having a PPP frame configuration and being octet-inserted or bit-inserted;

a deletion step for performing octet deletion or bit deletion to the data flag-deleted by said flag deletion step; and

an additional information addition step for adding additional information including information for identifying a frame partition to the data octet-deleted or bit-deleted by said deletion step.

Claim 92. (New) The data conversion method as claimed in claim 89, wherein said data conversion step comprises:

an additional information deletion step for deleting additional information from data having a frame configuration in which said additional information including information for identifying a frame partition is added to a PPP frame configuration and being not octet-inserted and not bit-inserted; and

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an insertion step for performing octet insertion or bit insertion to the data deleted of additional information by said additional information deletion step.

Claim 93. (New) The data conversion method as claimed in claim 89, wherein said data conversion step comprises:

an additional information deletion step for deleting additional information from data having a frame configuration in which said additional information including information for identifying frame partition is added to a frame configuration flag-deleted from a PPP frame configuration and being not octet-inserted and not bit-inserted;

an insertion step for performing octet insertion or bit insertion to the data additional information-deleted by said additional information deletion step; and

a flag addition step for adding a flag to the data octet-inserted or bit-inserted by said insertion step.

Claim 94. (New) The data conversion method as claimed in claim 89, wherein said data conversion step converts data having a frame configuration in which additional information including information for identifying a frame partition is added to a PPP frame configuration and being not octet-inserted and not bit-inserted into data having a frame configuration of data link layer protocol other than PPP.

Claim 95. (New) The data conversion method as claimed in claim 89, wherein said data conversion step converts data having a frame configuration in which additional information including information for identifying frame partition is added to a frame configuration flag-

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deleted from a PPP frame configuration and being not octet-inserted and not bit-inserted into data having a frame configuration of data link layer protocol other than PPP.

Claim 96. (New) The data conversion method as claimed in claim 89, wherein said data conversion step converts data having a frame configuration of data link layer protocol other than a PPP into data having a frame configuration in which additional information including information for identifying frame partition is added to a PPP frame configuration and being not octet-inserted and not bit-inserted.

Claim 97. (New) The data conversion method as claimed in claim 89, wherein said data conversion step converts data having a frame configuration of data link layer protocol other than a PPP into data having a frame configuration flag-deleted from a PPP frame configuration to which additional information including information for identifying frame partition is added and being not octet-inserted and not bit-inserted.

Claim 98. (New) The communication method as claimed in claim 65, wherein the third communication apparatus is a DCE, and the network includes a mobile communication network.

Claim 99. (New) The communication method as claimed in claim 102, wherein the third communication apparatus is a gateway, and the second network includes a mobile communication network.

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Claim 100. (New) The communication method as claimed in Claim 103, wherein the third communication apparatus is a DCE, and the network includes a mobile communication network.

Claim 101. (New) The communication method as claimed in Claim 104, wherein the third communication apparatus is a gateway, and the second network includes a mobile communication network.

Claim 102. (New) A communication method in a third communication apparatus which can communicate with a first communication apparatus through a first network and can communicate with a second communication apparatus through a second network, the first communication apparatus and the second communication apparatus performing data communication based on PPP, the communication method comprising the steps of:

receiving an LCP echo request transmitted by the first communication apparatus to the second communication apparatus; and

transmitting an LCP echo reply to the first communication apparatus,

wherein the first network is a telephone network.

Claim 103. (New) A communication method in a third communication apparatus which is directly connected to a first communication apparatus and can communicate with a second communication apparatus through a network, the first communication apparatus and the second communication apparatus performing data communication based on PPP, the communication method comprising the steps of:

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receiving an LCP discard request transmitted by the first communication apparatus to the second communication apparatus; and
discarding the LCP discard request.

Claim 104. (New) A communication method in a third communication apparatus which can communicate with a first communication apparatus through a first network and can communicate with a second communication apparatus through a second network, the first communication apparatus and the second communication apparatus performing data communication based on PPP, the communication method comprising the steps of:

receiving an LCP discard request transmitted by the first communication apparatus to the second communication apparatus; and
discarding the LCP discard request,
wherein the first network is a telephone network.